

ABSTRACT

The invention provides particle detectors and detection methods. A particle detector includes a spherical/ellipsoid shell comprising spherical and ellipsoid mirrors that define a focal point within an interior of the shell, a pair of opposing tubes passing through the spherical/ellipsoid shell and directed at the focal point for directing particles to the focal point, and a light source directed at the focal point for directing light at the particles to generate fluorescence from the particles at or near the focal point.